

# United States Patent [19]

Shiokawa et al.

[11] Patent Number: 4,849,432

[45] Date of Patent: Jul. 18, 1989

[54] HETEROCYCLIC COMPOUNDS

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[21] Appl. No.: 17,641

[22] Filed: Feb. 24, 1987

[30] Foreign Application Priority Data

Mar. 7, 1986 [JP] Japan ..... 61-48629

[51] Int. Cl. A61K 31/44; C07D 417/06; C07D 401/06

[52] U.S. Cl. 514/341; 514/333; 514/340; 514/342; 544/55; 544/96; 544/238; 544/242; 544/333; 544/334; 544/336; 544/409; 546/256; 546/275; 546/278; 546/280; 546/281; 548/127; 548/131; 548/134; 548/136; 548/143; 548/146; 548/193; 548/214

[58] Field of Search 546/278, 280, 256, 275, 546/281; 514/340-341, 342

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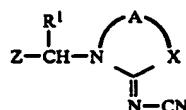
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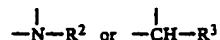
[57] ABSTRACT

Novel heterocyclic compounds of the formula



(I)

wherein, R<sup>1</sup> represents a hydrogen atom or an alkyl group, A represents an ethylene group which may be substituted by alkyl or a trimethylene group which may be substituted by alkyl, X represents an oxygen or sulfur atom or the group



in which R<sup>2</sup> represents a hydrogen atom of an optionally substituted alkyl, an alkenyl, an alkynyl or an acyl group, and R<sup>3</sup> represents a hydrogen atom or an alkyl group, and Z represents an optionally substituted 5- or 6-membered heterocyclic group which contains at least two hetero atoms selected from oxygen, sulfur and nitrogen atoms, or an optionally substituted 3- or 4-pyridyl group.

The above defined novel heterocyclic compounds of formula (I) exhibit powerful insecticidal properties.

9 Claims, No Drawings